

AD-A221 221

DTIC FILE COPY

(2)

DNA-TR-86-229

SOVIET MEASUREMENTS OF STRATEGIC BALANCE AND ARMS CONTROL

Judith K. Grange, et al.
Science Applications International Corporation
6021 South Syracuse Way
Suite 300
Greenwood Village, CO 80111

Document released under the
Freedom of Information Act.
DNA Case No. 87-89

21 April 1986

Technical Report

CONTRACT No. DNA 001-84-C-0307

DTIC
S ELECTE
MAY 04 1990
D

THIS WORK WAS SPONSORED BY THE DEFENSE NUCLEAR AGENCY
UNDER RDT&E RMSS CODE B383084466 V99QMXNN00009 H2590D.

Prepared for
Director
DEFENSE NUCLEAR AGENCY
Washington, DC 20305-1000

DISTRIBUTION STATEMENT A

Approved for public release
Distribution Unlimited

90 149

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION [REDACTED]		1b. RESTRICTIVE MARKINGS [REDACTED]	
2a. SECURITY CLASSIFICATION AUTHORITY [REDACTED]		3. DISTRIBUTION / AVAILABILITY OF REPORT [REDACTED]	
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE OADR			
4. PERFORMING ORGANIZATION REPORT NUMBER(S) SAIC-86/6054&FSRC		5. MONITORING ORGANIZATION REPORT NUMBER(S) DNA-TR-86-229	
6a. NAME OF PERFORMING ORGANIZATION Science Applications International Corporation	6b. OFFICE SYMBOL (if applicable)	7a. NAME OF MONITORING ORGANIZATION Director Defense Nuclear Agency	
6c. ADDRESS (City, State, and ZIP Code) 6021 South Syracuse Way, Suite 300 Greenwood Village, CO 80111		7b. ADDRESS (City, State, and ZIP Code) Washington, DC 20305-1000	
8a. NAME OF FUNDING / SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (if applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DNA 001-84-C-0307	
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO. 62715H	PROJECT NO. V99QMXN TASK NO. N WORK UNIT ACCESSION NO. DH008378
11. TITLE (Include Security Classification) SOVIET MEASUREMENTS OF STRATEGIC BALANCE AND ARMS CONTROL [REDACTED]			
12. PERSONAL AUTHOR(S) Grange, J.; Battilega, J.; Bennett, S.; Summers, M.			
13a. TYPE OF REPORT Technical Report	13b. TIME COVERED FROM 840401 TO 850930	14. DATE OF REPORT (Year, Month, Day) 860421	15. PAGE COUNT 87
16. SUPPLEMENTARY NOTATION This work was sponsored by the Defense Nuclear Agency under RDT&F Code B383084466 V99QMXN00009 H2590D. [REDACTED]			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
15	7	Arms Control Correlation of Forces	
5	4	Strategic Balance Net Assessment	
		Soviet Military Analysis Measures of Effectiveness	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) [REDACTED]			
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION [REDACTED]	
22a. NAME OF RESPONSIBLE INDIVIDUAL Betty L. Fox		22b. TELEPHONE (Include Area Code) (703) 325-7042	22c. OFFICE SYMBOL DNA/STTY

DD FORM 1473, 84 MAR

83 APR edition may be used until exhausted.
All other editions are obsolete.

SECURITY CLASSIFICATION OF THIS PAGE

(b)(1)

3. DISTRIBUTION/AVAILABILITY OF REPORT (Continued)

16. SUPPLEMENTARY NOTATION (Continued)

DIV
 COPY
 INSPECTED

TABLE OF CONTENTS

Section		Page
1	INTRODUCTION	1
1.1	Purpose	1
2	ELEMENTS OF THE SOVIET VIEW OF THE STRATEGIC BALANCE	3
2.1	Introduction	3
2.2	The Soviet Framework for Assessing Military Adequacy	6
2.2.1	Strategic Missions of the Soviet Armed Forces	7
2.2.2	Measurements of the Correlation of Forces	13
2.2.3	Assessment of Mission Adequacy	21
3	SOME IMPLICATIONS OF THE SOVIET ASSESSMENT METHODS FOR ARMS CONTROL	28
3.1	Introduction	28
3.2	Limiting the Rate of Change of the Threat	29
3.3	Prevent Introduction of New Kinds of Systems	32
3.4	Maintain Freedom to Determine MX of Delivery Systems	33
3.5	Strive to Define the Framework for the Negotiations Consistent with the Soviet Planning Framework	35
3.6	Try to Get an Increase in the Warning of Enemy Actions	37
3.7	Minimize the Intrusiveness of Verification Methods	40
4	SOME MAJOR CHANGES IN THE THREAT THAT IMPACT SOVIET ASSESSMENTS	42
4.1	Introduction	42
4.2	The Principal Changes Since 1982	43
4.2.1	Pershing II and GLCM Deployments	45
4.2.2	Long-Range ALCM	52
4.2.3	ICBM Modernization	55
4.2.4	The Militarization of Space	60
5	SUMMARY AND CONCLUSIONS	63

[REDACTED]

TABLE OF CONTENTS (Concluded)

Section	Page
6 LIST OF REFERENCES	69

[REDACTED]

[REDACTED]

[REDACTED]

SECTION 1

[REDACTED] INTRODUCTION

1.1 [REDACTED]

PURPOSE.

[REDACTED]

(b)(1)

Page 2 is deleted.
(b)(1)

[REDACTED]

SECTION 2

[REDACTED] ELEMENTS OF THE SOVIET VIEW OF THE STRATEGIC BALANCE

2.1 [REDACTED] INTRODUCTION.

[REDACTED]

(b)(1)

1. [REDACTED] The spiritual factor, for which there is not really a good English translation, captures such consideration as the will of the people, the morale of the nation, the commitment to the objectives of the nation, the willingness to suffer hardships in the national interest. It is an unquestionable element of the Soviet philosophy that their "whole people's" government lends itself to a stronger "spiritual" capability than the exploitative governments of capitalist countries. Since this factor is so unquestionable, it is probably also not really analyzed on a national level.

Pages 4 and 5 are
deleted, (b)(1)

[REDACTED]

[REDACTED]

(b)(1)

2.2

[REDACTED]

THE SOVIET FRAMEWORK FOR ASSESSING MILITARY ADEQUACY. [2]

[REDACTED]

(b)(1)

2. [REDACTED] The material in this section draws heavily on the previous research documented [REDACTED]

(b)(1)

Pages 7 and 8 are deleted. (b)(1)

[REDACTED]

[REDACTED]

[REDACTED]

(b)(1)

- [REDACTED] Nuclear missile strikes to destroy and annihilate objects which comprise the military-economic potential of the enemy, to disrupt the system of governmental and military control, and to eliminate strategic nuclear devices and the main troop units.
- [REDACTED] Military operations in land theaters in order to destroy the enemy forces.
- [REDACTED] Protection of the rear areas of the socialist countries and troop groupings from enemy nuclear strikes.

[REDACTED]

[REDACTED]

- [REDACTED] Military operations in naval theaters in order
to destroy enemy naval groups. [REDACTED]

(b)(1)

[REDACTED]

[REDACTED]

(b)(1)

2.2.2 [REDACTED] Measurements of the Correlation of Forces.

[REDACTED] In the most general sense, the Soviet concept of the correlation of forces expresses the dynamic relationship of conflict between two opposing social systems. Thus, a very broad set of considerations (including political, economic, moral, and military potentials) are, at least in theory, encompassed within this framework. There is an explicit recognition that international competition is not confined to warfare and that, even between military opponents, the outcomes of confrontation are dependent upon availability and utilization of resources other than those dedicated to a strictly military mission. In this comprehensive sense, the correlation of forces seems to be a broad philosophical concept, reflecting long-term trends of historical development. As such, it is abstract, and shifts in the correlation of forces (e.g., those which are identified as occurring in 1917, 1949, and 1969-1970 to the Soviet advantage) are perceived by the leadership based on a variety of factors, some of which are not easily measured.

[REDACTED]

[REDACTED]

[REDACTED]

(b)(1)

[REDACTED] The quantitative correlation of forces is defined as a ratio of the number of weapons, units, or personnel on one side to the number of similar assets on the other side. It is this form of index which has been discussed by the Soviets since at least the 1930s and has long appeared as part of the legend on maps of military operations. The quantitative correlation of forces and means consists of ratios of numbers of things. It is applicable only for items of the same type and is

[REDACTED]

(b)(1)

[REDACTED]

[REDACTED]

still regarded as a fundamental indicator of strength. In addition, such a measure is applicable only if the weapons of the two sides are being employed in similar types of actions and with similar levels of skill. The caveats on the interpretation of this measure are severe, but it has the advantages of being simple to calculate, containing fewer uncertainties than more complex measures, and being easy to understand. Thus, Soviet writings indicate that the quantitative correlation of forces is still an important indicator of fundamental force strength (e.g., see [Volkogonov 1984: 75]).

[REDACTED]

(b)(1)

[REDACTED] The existence of nuclear weapons has made the consideration of qualitative factors especially important. Prior to the existence of nuclear weapons, it was possible to estimate the probable outcome of a conflict based on information on the relative sizes of the two sides, expressed in terms of the quantitative correlations of each of the major combat elements of the force (e.g., personnel, tanks, aircraft, etc.) and considering historical experience. Thus, in the Great Patriotic War, the set of individual quantitative correlation of forces indices provided an adequate basis for forecasting prospects for success. The development and deployment of nuclear weapons, however, introduced a qualitatively new dimension to warfare (i.e., a "revolution in military affairs") and made it especially important that qualitative evaluation of the correlation of forces be made. [Tyushkevich 1975]

[REDACTED]

[REDACTED]

(b)(1)

- [REDACTED] Measures of the relative capabilities of opposing "offensive" forces (i.e., forces that have somewhat symmetric opposing missions against each other) to inflict damage (frequently associated with the term "correlation of forces and means").
- [REDACTED] Measures of the capability of a defensive force against the opposint offensive force (usually expressed in terms of "averted losses").
- [REDACTED] Measures of the relative time requirements for the execution of opposing actions (also known as indices of the "balance of time").

[REDACTED]

(b)(1)

[REDACTED] Correlation of Opposing "Offensive" Forces.

[REDACTED]

(b)(1)

[REDACTED]

[REDACTED]

[REDACTED]

(b)(1)

[REDACTED] One specific example of a measure of effectiveness of this form for estimating the correlation of opposing offensive nuclear forces was presented by Major General I.I. Anureyev in a 1967 article in Voyennaya Mysl' [Military Thought].[4] His discussion states that "the most important qualitative and quantitative factors" to be reflected in the assessment of the correlation include:

- [REDACTED] the quantity of combat means of the sides,
- [REDACTED] the destructive qualities of the weapons,
- [REDACTED] the vulnerability of the combat means at launch,
- [REDACTED] the vulnerability of combat means during flight, during movement on land and sea,
- [REDACTED] the quality of the control system, and
- [REDACTED] the capabilities of all types of support forces.

[Anureyev 1967: 36]

The specific formulation presented by Anureyev describes the correlation as a function of "the initial correlation of forces in terms of [nuclear] weapons; the distribution of nuclear weapons among the various branches of the armed forces; the effectiveness of the antiair (antimissile) defense of the sides; the tactical-technical characteristics of the carriers of nuclear weapons; protection and mobility of the nuclear means of the sides; the combat readiness of the nuclear means of the sides; the systems for control of the troops and combat means; the plan of nuclear strikes (distribution of nuclear means over enemy targets)".

4. [REDACTED] For a more extensive discussion of Anureyev's correlation of forces in terms of nuclear weapons with special application to arms control [REDACTED]

(b)(1)

[Anureyev 1967: 39] The mathematical formulation presented by Anureyev expresses the destructive potential of the force in terms of the area of lethal effect, represented as the cube root of the square of the yield of the weapons. The operational uncertainties are represented in two terms: the probability that a carrier can overcome enemy defense, and probability that the carrier will not be destroyed prior to launch. Parameters considered in the former include the tactical-technical characteristics of the carriers and the capabilities of the opponent's defenses. The probability that the carrier can survive to launch is dependent upon many factors, the most important of which are:

- [REDACTED] the plan of the nuclear strikes,
- [REDACTED] the combat readiness of the carriers,
- [REDACTED] the degree of automated control of troops and equipment,
- [REDACTED] the protection and mobility of the carrier launch facilities,
- [REDACTED] the reconnaissance system,
- [REDACTED] the accuracy of the carriers.

[Anureyev 1967: 40]

[REDACTED] The equation for the correlation of forces in terms of nuclear weapons is stated by Anureyev as follows:

$$C = \sqrt[3]{\left(\frac{Q_1}{Q_2}\right)^2} \frac{\sum_i \sqrt[3]{U_{i1}^2} \cdot V_{i1} \cdot W_{i1}}{\sum_j \sqrt[3]{U_{j2}^2} \cdot V_{j2} \cdot W_{j2}} \quad (1)$$

where

C = the basic correlation of forces in terms of nuclear weapons

Q₁ = total TNT equivalent of side 1 (ours)

[REDACTED]

Q_2 = total TNT equivalent of side 2 (enemy)

U_{i1} = Portion of TNT equivalent of side 1 delivered by carriers of type i

U_{j2} = Portion of TNT equivalent of side 2 delivered by carriers of type j

$V_{i1}(V_{j2})$ = Probability of i-type carrier of side 1 overcoming enemy defense (j-type carrier, side 2)

$W_{i1}(W_{j2})$ = Probability that i-type carrier of side 1 (j-type carrier of side 2) will not be destroyed on the ground.

[REDACTED]

(b)(1)

[REDACTED]

Correlation of Opposing Offensive and Defensive Forces.

[REDACTED]

(b)(1)

[REDACTED]

Pages 20 and 21 are
deleted. (b)(1)

[REDACTED]

[REDACTED]

(b)(1)

[REDACTED]

Combat effectiveness is defined as the correlation of forces of the opposing sides (correlation of the combat capabilities) and effectiveness of conduct of combat operations by the friendly and enemy subunits, units, and large units from the standpoint of degree of realization of their combat capabilities under the given situation conditions.

[REDACTED]

Clarification of the assigned combat mission as well as estimation of the enemy and the combat capabilities of friendly troops make it possible to determine the forces required to accomplish the combat mission or, if forces are limited, the degree of correspondence between anticipated results of combat operations and the assigned mission, that is, their combat effectiveness. Combat effectiveness as a rule is evaluated by an aggregate of indices. The principal one is the index characterizing the effectiveness of combat operations on the basis of degree of combat mission accomplishment.

[Neupokoyev 1973: 89]

[REDACTED]

(b)(1)

[REDACTED]

[REDACTED]

[REDACTED] ... From the experience of conducting maneuvers and exercises, with consideration of the experience of past wars, the dependence of the probability of mission accomplishment on the sides' correlation of forces can be deduced for various conditions of conducting combat operations.

[REDACTED] In the graphic [Figure 1] K_{dop} is the minimally attainable value K in which the probability of mission accomplishment is no less than the assigned, that is

$$P_b \geq P_{dop}$$

[Tarakanov 1974: 367]

(2)

(b)(1)

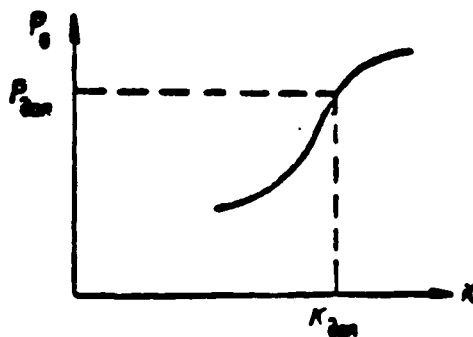


Figure 1. Relationship between probability success and correlation of forces.

Pages 25, 26, and 27
are deleted.
(b)(1)

[REDACTED]

SECTION 3

[REDACTED] SOME IMPLICATIONS OF THE SOVIET ASSESSMENT METHODS FOR ARMS CONTROL

3.1 [REDACTED] INTRODUCTION.

[REDACTED]

(b)(1)

[REDACTED]

[REDACTED]

(b)(1)

[REDACTED] The remainder of this section will comment briefly on the military interests that have probably had a strong influence on Soviet arms control interests in the past.

3.2 [REDACTED] LIMITING THE RATE OF CHANGE OF THE THREAT.

[REDACTED] Soviet arms control positions in the past have seemed to focus primarily on controlling the rate of change in the threat that they would have to deal with. Thus, the focus has been more on limiting the types of future problems that have to be planned for than on using arms control to solve current problems. The Soviet arms control positions have historically emphasized ceilings on numbers (at levels not radically below the existing numbers), and restrictions on modernization. The modernization restrictions were usually not highly specific, but would preclude very rapid wholesale change in the structure of the force.

[REDACTED]

(b)(1)

[REDACTED]

Pages 30 and 31 are deleted. (b)(1)

[REDACTED]

[REDACTED]

(b)(1)

3.3

[REDACTED]

PREVENT INTRODUCTION OF NEW KINDS OF SYSTEMS.

[REDACTED]

(b)(1)

[REDACTED]

[REDACTED]

[REDACTED]

(b)(1)

3.4 [REDACTED] MAINTAIN FREEDOM TO DETERMINE MIX OF DELIVERY SYSTEMS.

[REDACTED]

(b)(1)

6. [REDACTED] for a detailed discussion of this different in perspective on the "stability" characteristics of various types of nuclear delivery systems, depending upon whether the systems are in Soviet forces or in those of an opponent.

Page 34 is deleted.

(b)(1)

[REDACTED]

[REDACTED]

[REDACTED]

(b)(1)

3.5

[REDACTED]

STRIVE TO DEFINE THE FRAMEWORK FOR THE
NEGOTIATIONS CONSISTENT WITH THE SOVIET PLANNING
FRAMEWORK.

[REDACTED]

(b)(1)

[REDACTED]

Page 36 is deleted.
(b)(1)

[REDACTED]

[REDACTED]

(b)(1)

3.6

[REDACTED]

TRY TO GET AN INCREASE IN THE WARNING OF ENEMY
ACTIONS.

[REDACTED]

(b)(1)

[REDACTED]

Pages 38 and 39 are
deleted. (b)(1)

Though the Soviet military almost certainly sees potential value in use of arms control negotiations as an adjunct to the development of their own military forces and policies, they are not willing to provide a substantial amount of information to their potential opponents. Recent authoritative Soviet writings on arms control verification suggest that the military view on the hazards of providing too much information on Soviet forces has strongly influenced the Soviet positions in this area.[7] First, the Soviets believe that verification must be treated as only one method of ensuring treaty compliance. They emphasize that when dealing with the monitoring issue, the negotiators must recognize that whatever monitoring measures they propose will not be the only forces working toward the goal of achieving adequate observation of the treaty's obligations. These other factors affecting compliance include: the mutual interest in achieving the decided results from the treaty, the possibility of retaliatory actions, or the threat of exposing a country's violations to both domestic and international scrutiny. These and other factors are seen as possibly reducing the amount of monitoring activities necessary.

Second, the Soviets have stated that the verification measures must monitor disarmament, not armament. The Soviets are fearful that the verification requirements posed by the U.S. will be aimed at monitoring the weapon systems remaining in the force rather than the number of weapons dismantled, destroyed, or withdrawn. The formal Soviet position is that the sole purpose of verification methods is to aid the fulfillment of the disarmament agreement, and that there should never be "monitoring without disarmament". The Soviets categorize such monitoring as espionage. Further, even in monitoring of disarmament, methods that would result in the acquisition of information not strictly required to verify compliance with the requirements of the agreement would not be acceptable. Thus, though the Soviets have at times suggested that they are willing to agree to

7. These Soviet positions are discussed in greater detail in [Spurlock 1985].

[REDACTED]

some types of on-site inspection methods, they have made it very clear that any such methods that could make extra information available to the opponent will likely not be accepted.

[REDACTED]

SECTION 4

[REDACTED] SOME MAJOR CHANGES IN THE THREAT THAT IMPACT SOVIET ASSESSMENTS

4.1 [REDACTED] INTRODUCTION.

[REDACTED] Though past Soviet arms control positions and approaches probably provide the most accurate basis for anticipating future Soviet positions and actions, several changes in the force posture of the United States have occurred since the Soviets formulated their initial strategies for the START and INF negotiations. Changes in the posture of the threat are certainly not the only factor that the Soviets would consider in formulating their arms control positions. However, Soviet arms control positions in the past have clearly been formulated to try to obtain some degree of Soviet influence over the future forces of the United States. Thus, major changes in the U.S. prospects for future forces would be expected to be reflected in Soviet arms control provisions.

[REDACTED]

(S)(1)

[REDACTED]

[REDACTED]

(b)(1)

[REDACTED] By 1982, much of the form of planned and proposed U.S. strategic force modernizations was apparent. However, the numbers and characteristics of actual deployed U.S. forces in early 1982 were still nearly unchanged from what they were at the time of the signing of SALT II in 1979, and a number of U.S. decisions still remained before the plans so implemented. Although the protocol to the SALT II treaty had expired leaving several important issues unresolved (by now, the U.S. had already tested long-range SLCM and GLCM), the Reagan administration was, for the time being, observing the provisions of SALT II. Regardless of the fact that the U.S. had declined to ratify the treaty itself, nothing had yet occurred which would rule out the possibility of retrieving most of what the Soviets felt they had achieved in the SALT II negotiations. Thus, it is not surprising that the initial Soviet START position was quite similar in structure to the SALT II provisions. Equally unsurprising was the Soviet emphasis on trying to avert the deployment of P-II and GLCM at the centerpiece of the INF position.

4.2 [REDACTED] THE PRINCIPAL CHANGES SINCE 1982.

[REDACTED]

(b)(1)

[REDACTED]

[REDACTED]

[REDACTED]

(b)(1)

[REDACTED] A third major change was an apparent shift in U.S. strategic force priorities, as related in the Scowcroft report on ICBM modernization. The report recommended, in addition to a limited MX deployment (now 100 instead of the originally planned 200), that the U.S. also develop and deploy, by the early 1990s, a small single-warhead (probably mobile) ICBM. The U.S. Congress subsequently linked MX (now Peacekeeper) deployment to the development and testing of a small ICBM (SICBM or SICM). Thus MX deployment is now imminent (although still somewhat uncertain) but the likely number has been reduced and a new truly mobile U.S. ICBM is now a serious possibility in the 1990s.

8. [REDACTED] Some Soviet sources refer to the beginning of ALCM deployment as the deployment of the first operational adapted B-52G as occurring in September 1981. [Unattributed 1982]

[REDACTED]

[REDACTED]

[REDACTED] A fourth major change in the strategic situation was the initiation by the Reagan administration of a vigorous program to research the feasibility of a layered or tiered system of ballistic missile defense to "eliminate the threat posed by nuclear ballistic missiles." Although the U.S. decision as to whether or not to proceed with development of such a system is not scheduled until the early 1990s, Soviet planners must now consider the long term implications of an increased possibility of an effective U.S. system of ballistic missile defense on the capabilities of Soviet forces. They are also concerned that the research program could result in the development of new technical capabilities that could affect the effectiveness of elements of the Soviet force other than ballistic missiles. Of the four major changes that will be discussed, this is the most significant to the Soviets.

[REDACTED] Figure 2 illustrates a rough chronology of events between the initiation of the INF and START negotiations and the beginning of the Nuclear Weapon and Space Talks in 1985.

4.2.1 [REDACTED] Pershing II and GLCM Deployments.

[REDACTED] The change in U.S. forces which the Soviets have condemned most strongly has to do with the deployment of the Pershing-IIs and Ground-Launched cruise missiles in Europe. Under the NATO Council's decision of December 1979, 464 GLCMs were to be deployed in Great Britain, the FRG, Italy, Belgium, and the Netherlands; and 108 Pershing II missiles were to be deployed in the FRG. The initial deliveries of these missiles occurred in November 1983.

[REDACTED] Despite the fact that the Soviets expect these missiles to carry fewer weapons than 20 B-1 bombers or 3 Poseidon submarines, Soviet foreign policy has devoted an enormous effort in opposition to the deployment of these weapons in Europe. Part of the explanation for this strong Soviet reaction may be their continuing goal of weakening NATO solidarity.

[REDACTED] "Lenin said that in the struggle for securing peaceful conditions for building socialism one must know how

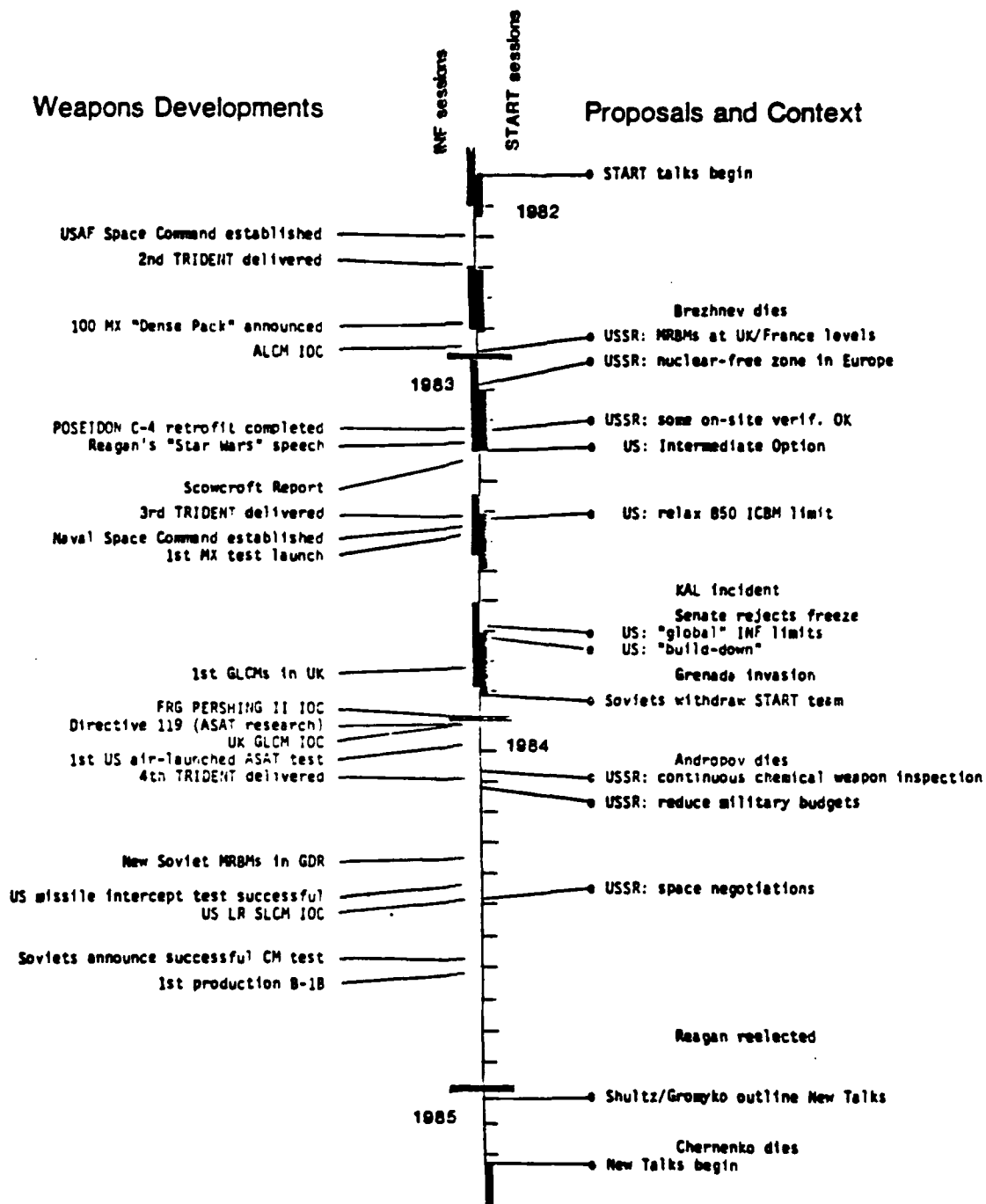


Figure 2. Negotiations and contextual chronology.

[REDACTED]

to take advantage of the differences between imperialist states. This has always been openly done by Soviet diplomacy. However, this has been done not to pit some Western countries against others, as the Western propaganda machine would like to represent it. The USSR took into account and tried to use certain differences in the interests of capitalist countries which are always present alongside their class solidarity and hatred to existing socialism . . . it [the Soviet Union] tried to do so in order to attract realistic-thinking Western ruling quarters to peaceful coexistence and cooperation with socialism".

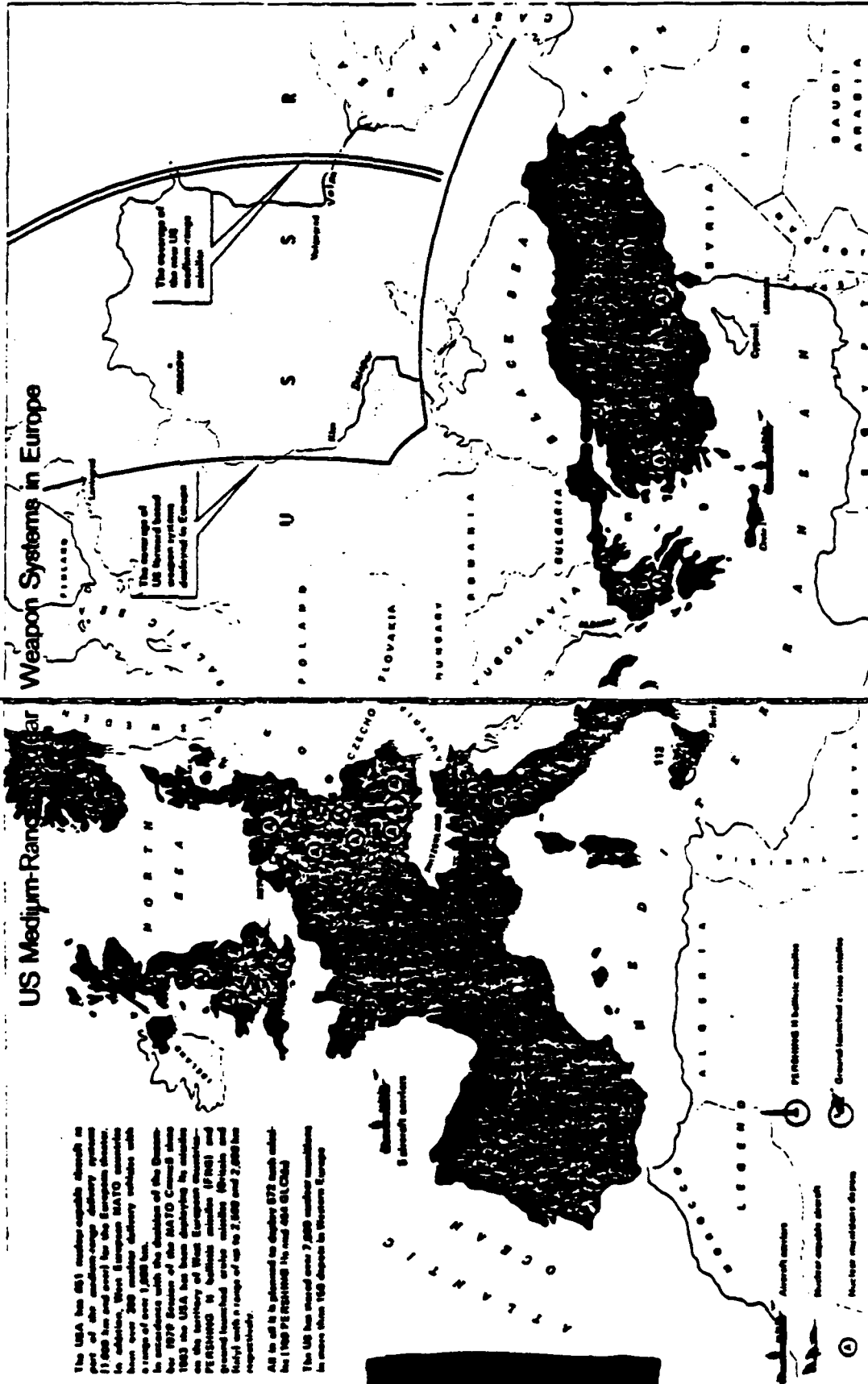
[Lebedev 1984;16]

[REDACTED] In addition to this type of political-military reasons, there are a number of military-technical reasons for genuine Soviet concern over the deployment of these missiles. The 1984 third edition of "Whence the Threat to Peace" credits the GLCM with a range of 2600 km and the Pershing II with a range of 2500 km. (see Figure 3) (the official U.S. range figures for these missiles are 2500 km. and 1800 km. respectively - [FY84 DOD Annual Report]). Because in the Soviet view these missiles are capable of being targeted against the USSR, they are considered to "directly supplement the U.S. strategic nuclear arsenal." [Zhurkin 1983;3]

[REDACTED] "American medium-range nuclear missiles placed in Europe become strategic weapons in regard to the USSR. Subsequently the placement of these missiles cannot help but have consequences for negotiations on strategic weapons."

[Ogarkov 1983;3]

[REDACTED] There is considerable evidence that Soviet military planners attempt to establish an adequate correlation of forces on a TVD (theater of military operations) by TVD basis. The Soviets claim that Pershing II and GLCM based in Europe could be used in support of a U.S. intercontinental nuclear strike or as part of a theater nuclear strike in several existing Soviet continental and oceanic TVDs. This potential alone could cause the Soviets to accord these missiles a much greater than expected military planning significance since the same missiles would have to be accounted for in correlation of forces calculations for several different



[Unattributed 1984]

Figure 3. U.S. Medium-range nuclear weapon systems in Europe.

[REDACTED]

TVDs. This Soviet view of the requirements to balance the U.S. missiles for each affected TVD is consistent with the specific countermeasures which the Soviets claim they were forced to take in response to the U.S. deployment. These countermeasures include:

1. Continuation of SS-20 deployments in the European USSR.
2. deployment of "enhanced-range", "operational-tactical missiles on GDR and CSSRS territories", and
3. move Soviet SSBNs closer to U.S. shores.
[Sokolov 1983] and
[Starobudov 1980]

[REDACTED] In discussing the impact of the deployment of GLCM and Pershing II missiles on the "decisive" fifth round of the START talks, Victor Vasilyev claimed that this U.S. step "would inevitably upset the balance of forces not only on a regional, but also on a world scale." [Vasilyev 1983;5] Thus, restoring the balance required both regional and world scale Soviet deployments which again implied that each of these new U.S. missiles in Europe had to be balanced at more than one level of Soviet military planning.

[REDACTED] The impact of these missiles at different planning levels is not the only problem that they create. The Soviets appear to be genuinely concerned about the potential of these weapons in a precursor U.S. nuclear strike aimed at critical Soviet command and control facilities as well as other strategic targets. This concern is especially important regarding the Pershing II deployment in West Germany.

[REDACTED] "Washington in actual fact intends them for inflicting a 'preventive' strike on Soviet ICBMs and other vitally important installations situated in western areas of the USSR. After all, the Pershing II missiles, which possess a range of 2,500 km and high accuracy, could inflict strikes upon the Soviet Union's installations at which they are aimed just 5 or 6 minutes after their launch. This would substantially alter the strategic situation."

[Ustinov 1984;4]

[REDACTED]

[REDACTED] "The point is that the flight time of Pershing II missiles to targets on Soviet territory would be only 4 minutes. This would create the temptation to launch them suddenly and the hope that the potential enemy would not have time to make a retaliatory strike."

[Simonyan 1979]

[REDACTED] Concern over limited warning attacks is not confined to Pershing II, or even to ballistic missiles. The Soviets have expressed concern over the unpredictable and potentially very limited warning that could accompany a U.S. first strike by cruise missiles in various basing modes including GLCM.

[REDACTED] Certainly the breakdown of arms control talks in 1983 was not solely the result of the effect on the correlation of forces due to the U.S. deployment of these "Euromissiles", but this specific action by the U.S. is the reason most often cited by Soviet authors for the breakdown of both the INF and START negotiations.

[REDACTED] "By embarking on the deployment of Pershing II and cruise missiles on the territory of the FRG, Britain, and Italy, the United States wrecked the talks on limiting nuclear arms in Europe."

[Sokolov 1983;V2]

[REDACTED] "If today the international situation has sharply deteriorated, then it is only as a result of the U.S. policy aimed at breaking the prevailing equilibrium and achieving military-strategic superiority over the Soviet Union. It is the new U.S. missiles - deployed in the immediate vicinity of the borders of the USSR, and other Socialist countries and capable of striking targets on our territory in a matter of minutes - that are disrupting the equilibrium. . . . By its actions in deploying the Pershing II and cruise missiles, the U.S. made it impossible to continue the Geneva talks on strategic arms."

[Dadyants 1984]

So, not only were these "Euromissiles" detrimental to the previously existing strategic stability, but they were also at least alledged to be a principal reason for the break in U.S.-Soviet negotiations. [Unattributed 1984a]

[REDACTED]

[REDACTED] In addition, the U.S. Pershing II and GLCM deployments are described in the Soviet arms control press as direct violations of the SALT II provisions which prohibit the circumvention of the Treaty through other states. [Unattributed 1984b] Even though the U.S. Senate never formally ratified SALT II, the Soviets believe that the U.S. has been "silently observing" its provisions. [Gerasimov 1983]

[REDACTED] In any case, well into 1984 the Soviets still publicly stated that the resumption of U.S.-Soviet dialogue on strategic arms was contingent on the U.S. "taking measures to restore the position which existed before the start of the deployment of the new U.S. nuclear missiles in Western Europe." [Dadyants 1984] Measures to restore such a position, most often were described to include specifically the "halting of further building on the 'Euromissiles' and displaying practical readiness to withdraw them." [Semeyko 1984]

[REDACTED] It is not clear whether or not the Soviets ever really expected their propaganda campaign or their arms control proposals and ultimatums to block the deployment of these missiles but three things regarding Soviet views are clear.

[REDACTED] 1. The Soviets have done their best to exploit the stresses which this issue posed for NATO solidarity regardless of the outcome.

[REDACTED] 2. The Soviets do see these missiles as a significant threat, and as one which complicates several levels of Soviet wartime and force planning.

[REDACTED] 3. The Soviets are pragmatic enough to prevent this deployment from interfering for very long with the pursuit of other important arms control objectives.

[REDACTED] For the reasons outlined above, the Soviet position in continuing negotiations will probably grudgingly shift away from attempts to have the missile removed. The new focus may be on attempts to achieve compensation in both intercontinental and theater forces limitations for the dual or multiple effects on

[REDACTED]

Soviet security caused by these new U.S. weapons and especially to halt further deployments of these missiles.

[REDACTED] "If the U.S. goes forward with the deployment of its medium-range nuclear means in Europe, then it must be frankly said that the situation would become complicated. Even greatly complicated.... Moreover, in Geneva we rather tersely warned the United States of America that if they acted in this way, if they continued to position their medium-range nuclear means — while they by all means emphasized that they have such plans and intend to carry them out — then they would place in question the negotiations, which must begin in accordance with the agreement reached in Geneva."

[Gromyko 1985;4]

4.2.2 [REDACTED] Long-Range ALCM.

[REDACTED] Since the mid-1970s, U.S. long-range cruise missiles have become a primary strategic concern for the Soviets, and may be second only to space-based weapons, as an arms control target. Soviet arms control objectives regarding long-range cruise missiles have consistently included a ban or, if that is not possible, then limitations on their numbers, range, payload, and basing.

[REDACTED]

(b)(1)

- [REDACTED]
1. delaying ALCM through a freeze for the duration of the talks,

[REDACTED]

2. limiting ALCM numbers and payload in a treaty, and

3. banning long-range cruise missiles in other basing modes (SLCM and GLCM).

[REDACTED] Some of the reasons for Soviet emphasis on ALCM in SALT II and START are fairly obvious. For one thing, the Soviet perception probably was and still is that the U.S. has a clear technological lead in this type of weapon system. Also, the ALCM would be the first (with the partial exception of the Minuteman III/MK12A) and potentially the most numerous (with the possible exception of the Trident II SLBM) in a series of new hard-target-capable weapons which would eventually be deployed under planned U.S. strategic force modernizations.

[REDACTED] The reasons for the depth of the Soviet concern over the ALCM may be less obvious to many Western analysts. To the U.S. the ALCM was a relatively slow, clearly retaliatory deterrent delivery system whose most important contribution was to preserve the third, air-breathing leg of the strategic triad. From this U.S. view, it is difficult to take seriously Soviet claims that the cruise missile is destabilizing (perhaps even relative to fixed MIRVed ICBMs). However, the cruise missile does present several serious problems for Soviet military planners.

[REDACTED] First, the Soviets consistently talk about very large numbers of U.S. cruise missiles (12,000 to 16,000). Although the U.S. may not actually have plans for anything approaching 12,000 cruise missiles, it is not difficult to arrive at such numbers if one estimates, as a conservative Soviet planner may, the upper limit on the U.S. potential to produce and deploy these weapons. (The last U.S. START proposal would have allowed 400 bombers with 20 ALCMs or 8000 cruise missiles on aircraft alone with no proposed limitation on the number of GLCM or SLCM [Aleximov 1983]).

[REDACTED] Second, Soviet planners would view the ALCM as only the first manifestation of a qualitatively new class of weapon systems. In January 1983,

[REDACTED]

even as the first version of this new class of weapons was beginning to be deployed, the U.S. was already reducing the production numbers of the first version in order to accommodate a more advanced model. In the absence of limitations, the eventual numbers of cruise missiles and the potential directions for their further development would be difficult for the Soviets to bound or to plan around. Therefore, having failed to negotiate a total ban, the Soviets are probably most interested now in limiting the numbers, modernization, and further development of this class of weapon systems.

[REDACTED] The Soviets appear to be genuinely concerned about their confidence in their ability to correctly discern the initiation, scale, and objectives of a cruise missile attack. [Zhurkin 1984;8] The combination of the difficulty in detecting cruise missiles, their high probability of destroying even very hard targets if they penetrate defenses, their ability to carry both nuclear and conventional warheads, their potential for carrying more than one warhead on each missile, their basing on many different launch platforms, and their ability to maneuver along their flight path all taken together create a situation in which Soviet military leaders might find it difficult to characterize and respond to the detection of various kinds and combinations of aircraft and cruise missile activity. Listed below are just some of the problems which cruise missiles will present for Soviet operational forces.

[REDACTED] — If the launch of cruise missiles from heavy bombers cannot be confidently detected and if the Soviets are not sure when or if they will detect the cruise missiles as they approach their borders, then what must be assumed if one or more U.S. bombers come within maximum cruise missile range of important targets in the USSR, even if they subsequently return?

[REDACTED] — Does the detection of a small number of cruise missiles indicate complete detection of a small attack, partial detection of a large attack, a limited nuclear attack, a conventional attack, a precursor to a massive strike, . . . ?

[REDACTED]

[REDACTED] — Must any cruise missile approach be assumed to be part of a larger nuclear strike? If this occurs in a crisis, should Soviet ICBMs be launched? How many ICBMs? Which ICBMs? What other response is appropriate?

[REDACTED] — What must be assumed if cruise missiles, or bombers which may be carrying cruise missiles, are detected and then lost by Soviet early warning systems?

[REDACTED] Even though U.S. analysts may consider such events to be very unlikely, this does not relieve Soviet military planners of the responsibility of being prepared for them. Some of the same questions as those presented above could be asked regarding the detection of ballistic missiles. However the peculiar attributes of cruise missiles and cruise missile carrying aircraft make many of the situations described above both more likely and at the same time more ambiguous for the cruise missile than for ballistic missiles. The increasing stealth of air-breathing delivery systems is making warning less reliable while their increasing lethality is making the penalty for failure to act on warning more severe. The Soviets probably see the cruise missile and stealth systems in general as introducing an entirely new class of ambiguities and "what if" situations. This type of poorly-bounded threat is the most troublesome for Soviet military planning.

4.2.3 [REDACTED] ICBM Modernization.

[REDACTED] In 1982, Congress directed the Department of Defense to recommend, by December, a permanent basing mode for the MX ICBM, now called Peacekeeper. By the end of 1982, the leading contender was the closely spaced basing system which had become known as "dense pack". This concept had stemmed from some original analysis done at the U.S. Air Force Foreign Technology Division in the late 1970s. This analysis of the targeting capability of Soviet ICBMs indicated that it might be very difficult for the Soviets to structure an attack against very hard silos which were close together without a significant risk of "fratricide"; that is, one attacking warhead destroying or interfering with the performance of other

[REDACTED]

arriving warheads. It was argued that due to this effect an aggressor could not be confident of the effectiveness of his attack and that this would enhance deterrence. Ironically, the same feature (that it would be difficult to ever be sure whether or not an attack on this basing mode would succeed) played a major role in the eventual decline of this concept.

[REDACTED] On 3 January 1983, President Reagan asked the President's Commission on Strategic Forces, to review the U.S. strategic modernization program and in particular to examine the future of U.S. ICBM forces and to recommend basing alternatives. The report of this commission, which became known as the Scowcroft Commission report after the chairman Brent Scowcroft, concluded that the problem of trying to solve all of the ICBM modernization tasks with a single weapon in a single basing mode was "virtually insoluble." The commission concluded that:

[REDACTED] "...the preferred approach for modernizing our ICBM force seems to have three components: initiating engineering design of a single-warhead small ICBM, to reduce target value and permit flexibility in basing for better long-term survivability; seeking arms control agreements designed to enhance strategic stability; and deploying MX missiles in existing silos now to satisfy the immediate needs of our ICBM force and to aid that transition."

[Scowcroft 1983;14]

[REDACTED] Acceptance of the Scowcroft Commission recommendations signalled an important change in the officially stated U.S. objective for deploying MX. The "immediate needs of our ICBM force" which Scowcroft was referring to did not include survivability which Secretary Brown had referred to only a couple of years earlier as the hallmark of U.S. ICBM modernization. The recommendation was that the search for a survivable basing mode should continue, but that it should not stand in the way of redressing the Soviet advantages in hard target destruction capability.

[REDACTED]

[REDACTED] The Soviets had consistently discounted the importance of survivability as a driving factor in U.S. ICBM modernization. Of course, a more survivable MX basing mode would complicate the critical mission of preempting a U.S. first strike, but in their view it had always been the first strike capability and not survivability which was driving U.S. ICBM modernization and strategic modernization in general. Politically approved Soviet military doctrine is based on the assumption that the U.S. is preparing such a capability; and the Soviet interpretation of the deployment of Peacekeeper in existing silos, consistent with this doctrinal assumption, had already been made clear.

[REDACTED] "...J. Schlesinger even planned to begin the deployment of powerful new MX ICBMs in the launch silos housing the Minuteman missiles. In view of the presumed increase in their vulnerability, this would have signified an unambiguous orientation of the landbased missile forces toward delivering a preemptive strike."

[Arbatov 1980]

[REDACTED] The deployment of Peacekeeper in Minuteman silos was interpreted by the Soviets as confirmation that the U.S. intended to use this missile in a first strike or failing that to launch Peacekeeper on warning.

[REDACTED] "Where is the logic here. The answer begs itself: if it is planned to launch the 'MX' missiles first, then it is not important what kind of silos they are in. By locating the new 'MX' missiles, the most effective of any ever in the U.S. arsenal, in old 'Minuteman' silos, the Reagan administration has essentially affirmed that this is a weapon for a first strike on the Soviet Union."

[Zhurkin 1984;5]

The requirement for launch on warning if MX were deployed in silos was described by Secretary Brown in his FY 1982 Annual Report to Congress.

[REDACTED] "... while the Soviets cannot ignore our capability to launch our retaliatory forces before an attack reaches its targets, we cannot afford to rely on

[REDACTED]

'launch on warning' as the long-term solution to ICBM vulnerability. That is why the new MX missile should be deployed in a survivable basing mode, not in highly vulnerable silos. . . ."

[REDACTED] Thus, the recommendations of the Scowcroft Commission Report and the subsequent decision to deploy Peacekeeper in existing silos probably had several important implications for Soviet planning including arms control planning.

[REDACTED] As for the other major recommendation, the development of a single-warhead, possibly mobile, small ICBM; the Soviet response has been subdued but perhaps revealing. A month before the date of the Scowcroft report, its recommendations were being discussed in the Soviet press. The "plans" to build a small ICBM were described as leading to certain arms control problems and as inconsistent with U.S. START proposals.

[REDACTED] "The plans to build small intercontinental ballistic missiles will lead to the violation of the SALT Agreement which has been silently observed up to now. This agreement envisages a restriction on the number of resources used to transport nuclear weapons. For this reason alone, these plans are contrary to the proposal President Reagan himself conveyed during the strategic arms limitation and reduction negotiations. What is more important, those plans look like an invitation to take a new step in the arms race."

[Gerasimov 1983]

[REDACTED] "...in fact, the mobile midget, like the rapidly multiplying missiles with a flat trajectory [cruise missiles], does make it more difficult to reach agreement in the sphere of limiting nuclear arms."

[Gerasimov 1983]

[REDACTED] Although the Soviets have expressed concern over the potential numbers of these small ICBMs and their effect on arms control, there have been noticeably few recent Soviet discussions of any arms control verification problems associated with the deployment of mobile ICBMs (this in spite of the clear indications from

[REDACTED]

the Scowcroft report that mobile basing was a likely candidate for the small ICBM). A small mobile U.S. ICBM is described as making arms control more difficult, but probably more because of the numbers and proposed performance of the missile and not necessarily because of its mobility.

[REDACTED] The Soviet emphasis on the numbers of small ICBMs and the suggested qualitative advances such as the combination of high yield and low CEP (perhaps achieved through MaRV technology) may be the result of several factors. First, the Soviets may be considering that the record shows that the U.S. always suggests a mobile variant of a new ICBM, but so far has never deployed one. Second, they have as a going-in assumption that the U.S. strategic force modernization is aimed at the development of a first strike capability and large numbers of very capable hard target weapons, even if deployed on single-warhead missiles, could turn out to be even more effective in supporting these U.S. aims than 100 MX. Finally, Soviet negotiators and the censored Soviet press must be controlled in their comments on mobile missiles if the Soviets beginning the deployment of their own mobile ICBMs. In any case, the Soviets have chosen so far to focus their concern and criticism on the potential numbers of these new missiles and on how U.S. plans would violate previously negotiated limitations.

[REDACTED] The fall 1983 modifications to the U.S. proposal included an increase from 850 to 1200 or 1250 in the limit on the aggregate number of ICBMs and SLBMs. This would allow, all other numbers remaining the same, for the deployment of 350 to 400 small single warhead ICBMs. Predictably the Soviets interpreted this modification to the U.S. position as a means of "finding room" for the small ICBM. [Aleximov 1983;314] However, larger numbers of these small missiles have been discussed. Many U.S. and Soviet sources have suggested numbers in the range of 500 to 1000, and one Soviet source has referred to U.S. plans to deploy 3350 to 5000 small ICBMs by the early 1990s. [Zhurkin 1984;6]

[REDACTED]

4.2.4 [REDACTED] The "Militarization of Space".

[REDACTED] The Soviets have repeatedly accused the U.S. of attempting to militarize space in nearly every major aspect of the U.S. space program throughout its history. At the same time, the Soviets have been very careful not to acknowledge any of their own military uses, programs, or objectives for space.[9] The "militarization of space" as the Soviets describe it seems to include:

- [REDACTED] 1. the development of military systems with space-based components to support terrestrial combat operations (navigation, reconnaissance, surveillance, communication, warning, etc.);
- [REDACTED] 2. the development of space-based weapons for use against terrestrial targets;
- [REDACTED] 3. the development of space-based weapons for use against targets (orbiting space platforms or ballistic missiles) in space; and
- [REDACTED] 4. the development of weapons based on the earth for use against space-based targets.

[REDACTED] Although the last three of the four categories listed above involve weapon systems, by far most of the military uses of space to date are in the first category. However, the Soviets have focused their space arms control efforts on banning space-based weapons (categories 2 and 3 above). In their UN proposal in 1981 and through the beginning of START, the Soviets had not included anything in their position which would have affected the continued testing and development of their existing ground-based ASAT systems (category 4).

9. [REDACTED] In 1985, as part of their propaganda campaign against the Strategic Defense Initiative, the Soviets apparently relaxed their censorship standards in this area, admitting that they use satellites to support such functions as communication, navigation and reconnaissance. [Unattributed 1985]

[REDACTED]

[REDACTED] Since the beginning of the START negotiations, some important changes have occurred in the "space threat" to the Soviet Union and in Soviet perceptions of that threat. These changes include:

- [REDACTED] — 1 September 1982, USAF Space Command established
- [REDACTED] — 23 March 1983, President Reagan's "Star Wars" speech
- [REDACTED] — June 1983, Naval Space Command established
- [REDACTED] — October 1983, The Fletcher and the Hoffman reports
- [REDACTED] — 6 January 1984, Presidential Directive 119
- [REDACTED] — 27 March 1984, General Abrahamson appointed to oversee SDI
- [REDACTED] — 1984, First two tests of the F-15 launched ASAT
- [REDACTED] — 1985, Tests of several SDI-related technologies
- [REDACTED] — 1985, Establishment of the U.S. Unified Command for Space

[REDACTED] The increased possibility of the U.S. development of space-based weapon systems (or components) and U.S. preparations to test and deploy the new F-15 launched ASAT system apparently convinced the Soviets to advance their objective of banning space-based weapons with a proposal to also ban the development of new earth-based ASAT systems (category 4) and to dismantle existing systems in this category. This change in the Soviet position was put forward in the form of a draft treaty in August 1983. [Pravda 1983;4]

[REDACTED]

[REDACTED] The Soviets seem to be especially concerned that the deployment of strike weapons (especially weapons based on new physical principles) in space could cause a new revolution in military affairs. The capability for rapid strikes, high lethality, and global range of such systems could have far broader effects than simply negating ballistic missiles (serious though that effect might be). In some ways, the Soviet military planners may have begun to feel that they had been fully effective in developing ways to cope with the revolution caused by nuclear weapons only in the last 10 years. They would probably prefer to avoid the task of trying to catch up with U.S. technological developments toward a new revolution for at least a few more years.

[REDACTED]

SECTION 5

[REDACTED] SUMMARY AND CONCLUSIONS

[REDACTED] Though the requirements and concerns of the Soviet military are not the only factors that influence the positions that the Soviet arms control negotiators offer, it is unlikely that the Soviet Union will agree to arms control provisions that measurably reduce the ability of the military forces of the Soviet Union to fulfill the requirements for military capability that are formally levied through military doctrine. *... includes → to ...*

[REDACTED]

(b)(1)

- [REDACTED] Identify the appropriate dimensions of strength to measure in order to anticipate the outcome of specific military missions.
- [REDACTED] Formulate specific indices that are sensitive to those dimensions of capability.
- [REDACTED] Determine values of the indices that are likely to provide adequate confidence that the Soviet forces will be able to accomplish their missions, considering all of the uncertainties that are not resolvable in advance.

*Pages 64 through 77
are deleted. (b)(1)
Page 78 is intentionally
blank.*